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AMENDMENTS TO THE SPECIFICATION

- Please replace the paragraph on page 1 lines 5 to 8 with the following paragraph:

This application is a continuation-in-part of U.S. Patent Application No. 09/978,217, now U.S. Patent No. 6,648,497, which claims the benefit of the United States Provisional Patent Application having serial number 60/261,562 and filed on January 15, 2001, ~~the disclosure of which is~~ both the disclosures of which are incorporated by reference in their entirety herein.

- Please insert the following paragraph after the last full paragraph on page 1 line 14 and before the section entitled BACKGROUND OF THE INVENTION:

The present invention further relates to the field of fiber optic lighted displays having conveniently-replaceable electronic components within the displays, and in particular, to lighted displays having safety mechanisms that preclude access to those electronic components when power is applied to them.

- Please insert the following paragraphs after the last full paragraph on page 3 line 14 and before the section entitled SUMMARY OF THE INVENTION:

Additional designs for outdoor lighted display stands are also needed that include various improvements to the airflow within the display stand and the resultant cooling function. In particular, variations in the placement of the airflow ports are needed so as to provide improved cooling ability for the electronic components within the display stand while still

retarding the harsh environmental effects encountered when the stand is used in an outdoor environment.

Further, safety mechanisms involving the electrical components contained within display stands are needed. In particular, no lighted display stands have heretofore adopted a modular approach with respect to the replacement of the electronic components within the lighted display stands, for example, so as to easily replace a burned-out light bulb or other electrical component. When providing such a solution, the safety of the operator must be accounted for, particularly when performing the replacement in a wet or otherwise harsh environment. In certain aspects, such safety considerations may include lock-out and power-off functions that preclude the operator from contacting fully-powered electrical components.

- Please insert the following paragraphs after the last full paragraph on page 5 line 16 and before the section entitled BRIEF DESCRIPTION OF THE DRAWINGS:

In other particularly preferred embodiments, a stand is provided including a support system for supporting the stand; a shell coupled to the support system, the shell including an inner volume for housing electrical components; and a cover disposed atop the shell, the cover including an inner volume in contact with the inner volume of the shell, the cover extending beyond a lateral surface of the shell such that the cover has at least one hole disposed on a downward-facing surface of the cover, the hole providing ventilation between the inner volume of the shell through the inner volume of the cover and out to an outside environment, the cover including a receptacle configured to hold a fiber-optic decoration.

In particularly preferred aspects of this embodiment, the stand further includes an access door disposed on the shell for accessing the electrical components within the inner volume of the shell. The access door may include a safety mechanism that prevents the access

door from being opened when electrical power is applied to the electrical components. Such safety mechanism may include an electrical access opening for accepting an electrical plug, the access door being prevented from opening to enable access to the electrical components when the electrical plug is inserted into the electrical access opening; or an electrical connector for accepting an electrical plug, the access door being prevented from opening to enable access to the electrical equipment when the electrical plug is inserted into the electrical connector; or an electrical lock that locks the access door, the access door being prevented from opening to enable access to the electrical equipment when power is applied to the electrical components; or an actuating switch that disconnects power to the electrical components when the access door is opened.

In still other embodiments of the invention, a stand is provided for holding a fiber-optic decoration including an access door disposed on the stand for accessing electrical components within an inner volume of the stand.

In yet other embodiments of the present invention a holder for mounting electrical components used within a decorative lighting system is provided including a safety mechanism that prevents the holder from being accessed within the decorative lighting system when electrical power is applied to the electrical components. In particular aspects of this embodiment, the safety mechanism includes an electrical lock that is activated when power is applied to the electrical components; or an actuating switch that disconnects power to the electrical components when the actuating switch is released.

- Please insert the following paragraphs after the last full paragraph on page 6 line 9 and before the section entitled DETAILED DESCRIPTION OF THE INVENTION:

Figs. 5A and 5B are side and bottom views respectively of a lighted display stand according to another embodiment of the present invention;

Figs. 6A and 6B are operational views of the electronic parts module for a lighted display according to one embodiment of the present invention;

Fig. 7 is a top perspective view of the electronic parts module for a lighted display according to one embodiment of the present invention; and

Fig. 8 is a schematic of the electrical components contained in the parts module for a lighted display according to one embodiment of the present invention.

- Please insert the following paragraphs after the last full paragraph on page 13 line 22 and before the paragraph beginning on page 14, line 1:

Referring now to Fig. 5A, another preferred embodiment of a fiber optic Christmas tree stand 210 is provided according to the present invention. As previously noted, the fiber optic Christmas tree stand 210 is comprised, generally, of a support system 214 coupled to a cylindrical shell 212. Further, a cover 218 is disposed atop shell 212 to provide a cover for the shell and a receptacle 230 for receiving a fiber optic or other lighted decoration.

The support structure 214 for the fiber optic Christmas tree stand may be composed of any known support structure that provides for sufficient ground clearance for the overall stand 210 such that the stand's base and associated bottom surface 213 remain safely above a ground level upon which the stand is resting. In the particular embodiment of Fig. 5A, the support system for the base consists of three radially-extending legs 215 and 216 (only two shown) which are secured to shell 212 via preformed, engageable slots within the shell. Feet 217 and 218 are formed as part of the legs so as to raise the entire structure above ground level.

Shell 212 may, in general, consist of molded plastic which safely houses and insulates the electrical components use to illuminate the lighted display. Shell 212 may be of any shape suitable for housing the electrical components while providing a stable support for the display. Shell 212 necessarily has an inner volume within which the electrical components are disposed. Cover 218 is mateably engaged with shell 212 so as to form a singular housing structure for the display. As shown in Fig 5A, cover 218 is a three-dimensional, molded piece that has its own inner volume. The inner volume of the cover is disposed directly adjacent to and is thermodynamically coupled with the inner volume of shell 212.

Referring to Fig. 5B, a bottom view of fiber optic stand 210 is provided. Vents 250 are provided on the bottom surface 213 to permit ambient air to enter the inner volume of shell 212. One of the electrical components within shell 212, i.e. fan 252, is provided to facilitate the circulation of air throughout the inner volume of shell 212. In the particular embodiment of the invention provided in Fig. 5B, cover 218, which is disposed on top and mateably engaged with shell 212, includes downward-facing ventilation slots 260, 261. Since the inner volume of shell 212 and the inner volume of cover 218 are thermodynamically coupled, slots 260 and 261 provide an exit port for the circulating air within the inner volumes of the shell and cover. It should be understood that the particular ports of airflow ingress and egress will depend on the direction in which the fan is circulating the air as well as other factors related to the ambient environment. Thus, properly designed, ventilation slots 260 and 261 could serve as the point of airflow ingress while vent 250 could serve as the point of airflow egress. In either case, the operation of the fan 252 causes ambient air to be drawn into the inner volumes of both the shell and the cover and circulated within them to cool the electrical components therein.

In one particularly preferred aspect, downward facing slots 260 and 261 are disposed on the bottom surface of a lip 263 of the circular cover 218. This cover lip is designed to extend beyond the lateral surface 222 of shell 212 and is designed to be at a sufficient height

above ground level such that accumulating debris and snow around the lighted display base does not obstruct the slots. In this arrangement, i.e. where slots 260 and 261 serve as the point of airflow egress, additional advantages in the display base design are realized in that the heated air expelled from the inner volumes of shell 212 and cover 218 are directed downward to melt any snow or blow away any debris that has accumulated around the base. This self-clearing function is accentuated when numerous slots are provided along the lip of cover 218 so as to provide the greatest possible surface area of blowing coverage around the lateral surface 222 of shell 212 and to further ensure that even a partial blockage of one or more of the slots does not result in the complete obstruction of all expelled air from the display stand.

As further improvements to the above-described lighted display stand, certain conveniences and safety features may be included that facilitate the safe removal and/or replacement of internal electronic components without disrupting, moving or otherwise upsetting the stand's position and/or orientation. For example, present designs for lighted displays and fiber optic Christmas tree bases do not provide for an easy removal mechanism for accessing the electrical components therein. According to one particular embodiment of the present invention, Figs. 6A, 6B, and 7 illustrate a module for holding the electrical components within fiber optic base 210.

Referring to both Figs. 6A and 6B, the electrical components within shell 212 are accessed through an access door 280. Access door 280 is slideably engaged with shell 212 along grooves 282 and 283 (not shown) so as to facilitate the movement of the door. Depression 285 (Fig. 5A) and finger tab 286 (Fig. 6A) are provided for assisting the user with the opening of access door 280. In particular, an operator pushes depression 285 inward toward the inner volume of shell 212 causing the left side of access door to slide back slightly into the volume along slideable grooves 282 and 283. Simultaneously, the user contacts finger tab 286 (Fig. 6A) and pushes access door radially along the circumferential direction of the

shell's outer surface to slide the access door open. Thus, in its fully-closed position, access door 280 is flush with outer surface 222 of shell 212 and provides a seal with sufficient tolerance so that external debris, snow and other materials do not enter the inner volume of shell 212. In its fully opened position, access to the inner volume of shell 212 is provided and door 280, as shown in Fig. 6A, is slid to the left to a point at which finger grooves 286 are still exposed along the outer surface so as to permit the closure of the access door.

As shown in Fig. 6B, once access door 280 has been opened, access is provided to the electrical components within the lighted display or fiber optic Christmas tree stand. In the particular embodiment of Fig. 6B, a tray or electrical component mount 300 may be slid out to access the electrical components thereon. Although not shown in Fig. 6B, tray or holder 300 may include slideable engagement mechanisms along the bottom surface, counterparts for which are provided within the shell 212, such that the fully inserted component mount maintains a particular alignment and position within the inner volume of shell 212. Further, any one or portion of the numerous electrical components needed within the lighted display may be affixed to tray 300.

According to one aspect of the present invention provided in Figs. 6B and 7, and in particular with respect to a fiber optic Christmas tree stand, certain specific electrical components are shown mounted to the tray. In this embodiment, such electrical components include a lamp 370, a fan 352 and a color wheel motor 372 and various other circuitry on a printed wiring board 374 for interconnecting and operating these primary electrical components.

Electrical interconnection between the electrical components mounted on tray 300 and the electrical power supply for those components may be made via one of any number of electrically safe and reliable connection methods. As shown in Figs. 6B and 7, electrical connector 340 is provided so that an external plug and transformer may be electrically coupled to the inserted connector to provide power to the electrical components on the tray. It should be

realized that although this is one preferred way to provide electrical power to the components within the lighted display, other electrical connectors that are well-known in the electrical connection arts may be used. For example, a circuit board edge connector may be attached along tray edge 342 (Fig. 7). This board edge connector would engage with a mating connector disposed within the inner volume of shell 212 so as to provide electrical connection to the other electrical components and to the power supplies, whether they are within or without the shell. Regardless of the electrical connection mechanism, however, one particularly preferred embodiment of the present invention includes a tray or holder which is entirely removable from shell 212 for cost-effective, labor-efficient and convenient replacement of either one or more of the electrical components on the tray. In this arrangement, the entire tray may be economically and conveniently replaced, if any one of the electrical parts burns out or becomes otherwise unusable. Advantageously, this replacement would be performed without disrupting or moving the lighted display base.

Referring now to Fig. 8, a schematic of electrical components mounted to tray 300 is provided according to one particularly preferred embodiment of the invention. In this arrangement, the 120V AC power provided at wall outlet 410 and through plug 411 is transformed to 12V AC power with transformer 412. Electrical connection to the components on tray 300 is provided by mating connectors 440 and 441 (corresponding to connector 340 – Fig. 7 - and 341 – Fig. 5A - respectively). Thus the tray, which acts as a mounting base for all the electrical components, has a single point of electrical contact with the power supply through connectors 440 and 441 and the power to the components may be shut off with a simple disconnection of the power source.

In operation, 12V AC power is applied to the circuit shown in Fig. 8 through fuse 442 and safety switch 443. Access door safety switch 443, however, is closed when the electrical components are safely housed and configured as described in more detail below.

Diode bridge 450 is energized by the application of power and provides a full-wave rectification and conversion of the 12V AC power to 12V DC power. Smoothing capacitor 451 is included to shape and smooth the resultant 12V DC waveform. Normally open thermal safety switch 455 prevents the energization of relay coil 446, while 12 V DC is provided through fuse 447 to drive fan 452. Finally, during normal operation, relay 445 connects the common relay terminal (C) to the normally closed (NC) terminal to provide unrectified 12V AC power to lamp 470 and color wheel motor 472.

When thermal overheating of the electrical components occurs, normally open thermal switch 455 closes so as to energize relay coil 446. This causes the relay to switch the common terminal (C) to connect to the normally open (NO) terminal such that power is removed from lamp 470 and fan 472. Diode 456 provides for half-wave rectified 12V power to be continuously applied to relay coil 446 in this instance, even if the thermal condition which caused switch 455 to close is removed and the switch reverts to its normally open position. Capacitor 447, connected across the relay coil, acts to smooth the half wave DC current to force the relay to stay closed. Thus, following a thermal overheating condition, the primary electrical components (except the fan) on the tray 300 remain off. This stage persists until the user disconnects the 12V AC power to diagnose the source of the thermal overload and resets relay coil 446 and relay 445.

According to one safety aspect of the present invention, access door safety switch 443 (shown as circular contact button 343 in Figs. 6A and 6B) is provided to prevent energization of any of the electrical components on tray 300 when the access door is open. In normal operation of the lighted display stand, the back of the access door 280 contains a plastic latch, ramp or other contact surface that pushes button 343 back into the inner volume of shell 212 when the access door is closed. Upon opening the access door beyond a certain point, the button extends outward thereby opening the access door safety switch 443 and removing power

from all the electrical components on the electrical mounting board 300. This prevents a user from contacting energized and moving electrical components during the removal and servicing of the tray and its components.

According to another safety aspect of the present invention, access door 280 includes an electrical access opening or port, 342 through which connector 341 is placed to make electrical connection to complementary connector 340 on tray 300. The electrical access port is placed close to the leading edge of the access door which is first to be slid behind the side surface 222 of shell 212. With this configuration, the access door is prevented from opening when the connector, and therefore power, is applied to the electrical components in the lighted display stand.

It should be noted that those of skill in the art will realize numerous variations in which the electrical connector that supplies the power to the system prevents the opening of the access door until the power is unplugged. In particular, the access door itself may have the connector on it (as differentiated from an access hole for insertion of the external connector). In addition, the electrical access port may be located off the access door on the side surface 222 of shell 212 just behind the leading edge of the access door. In this arrangement, the access door would be obstructed from opening in a similar manner as described above.

Those of skill in the art will also recognize that numerous other safety mechanisms may be employed to prevent access to the energized circuitry. For example, an electrically energized lock may be employed on the tray 300 that clasps the access door shut so long as power is applied to the lighted display. In this arrangement, as with the thermal safety fuse, the power would have to be removed from the circuitry in order to open the access door and access the electrical components. Oth r electrical safety mechanisms are similarly contemplated by the present invention.